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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/685,640	10/15/2003	Jon Raymond Groh	041A.0003.U1(US)	4975
29683	7590	03/17/2006	EXAMINER	
HARRINGTON & SMITH, LLP 4 RESEARCH DRIVE SHELTON, CT 06484-6212			ALEXANDER, MICHAEL P	
			ART UNIT	PAPER NUMBER
			1742	
DATE MAILED: 03/17/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/685,640

Applicant(s)

GROH ET AL.

Examiner

Michael P. Alexander

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 10/15/03, 2/14/05.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim(s) 1-19 is/are pending.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-2, 5-13 and 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang (EP 260,512).

Regarding claim 1, Chang teaches (page 7 lines 45-55) a method of heat-treating a nickel-base superalloy article comprising at least 35% of gamma prime phase and having a gamma prime solvus temperature, comprising the steps of: super-solvus heat treating the superalloy article to a temperature above the solvus temperature and at 27 degrees above in the embodiments of examples 2-7; and holding at the super-solvus heat treatment temperature for a time to essentially completely dissolve the gamma prime precipitate.

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With respect to the step of providing a furnace having a furnace tolerance temperature in claim 1, the Examiner asserts that a furnace having a furnace tolerance temperature would be inherent because Chang teaches heating the nickel-base superalloy articles.

With respect to the percent of gamma prime phase in claim 1, the Examiner notes that the range of at least 35% disclosed by Chang overlaps with the claimed range, which is prima facie evidence of obviousness. See MPEP 2144.05 I. It would have been obvious to one of ordinary skill in the art to select the desired amount of gamma prime phase from the range of Chang because Chang teaches the same utility throughout the disclosed range.

With respect to the heat treatment temperature in claim 1, Chang does not specify that the temperature would be only about the gamma prime solvus temperature plus the furnace tolerance temperature, but the Examiner asserts that such temperature is suggested by the examples 2-7 which teach temperatures of only 27 degrees above the solvus temperature which would be about the same temperatures disclosed by applicant (see page 2 of the instant specification).

With respect to the heat treatment time in claim 1, Chang does not specify heat treating for a time of 0.25-2 hours. However, Chang teaches (page 7 lines 45-55) heat treating for a time to essentially completely dissolve the gamma prime precipitate. Since treatment time is a recognized result-effective variable as taught by Chang, it would have been obvious to one of ordinary skill in the art to select the desired

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treatment time in order to essentially completely dissolve the gamma prime precipitate as a routine optimization as taught by Chang.

With respect to the recitation "for reducing stress" in claim 1, the Examiner asserts that the method would inherently reduce stress because Chang teaches all the steps of the claimed method.

Regarding claim 2, Chang teaches (Examples 2-7) treating at temperatures of 15 and 27 above the gamma solvus temperature which suggest the claimed range of about the gamma solvus temperature plus the furnace tolerance temperature plus about 5 degrees F.

Regarding claim 5, Chang does not specify heat treating for a time of 1-2 hours. However, Chang teaches (page 7 lines 45-55) heat-treating for a time to essentially completely dissolve the gamma prime precipitate. Since treatment time is a recognized result-effective variable as taught by Chang, it would have been obvious to one of ordinary skill in the art to select the desired treatment time in order to essentially completely dissolve the gamma prime precipitate as a routine optimization as taught by Chang.

Regarding claim 6, Chang teaches (Examples 2-4) cooling at 1500 degrees F per minute which would be the claimed step of quenching.

Regarding claim 7, Chang teaches (page 7 lines 45-55 and Examples 2-7) a method of heat-treating a nickel-base superalloy article comprising at least 35% of gamma prime phase and having a gamma prime solvus temperature, comprising the steps of: super-solvus heat treating the superalloy article to a temperature above the

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solvus temperature and at 27 degrees F above the gamma solvus temperature; and holding at the super-solvus heat treatment temperature for a time to essentially completely dissolve the gamma prime precipitate.

With respect to the percent of gamma prime phase in claim 7, the Examiner notes that the range of at least 35% disclosed by Chang overlaps with the claimed range, which is prima facie evidence of obviousness. See MPEP 2144.05 I. It would have been obvious to one of ordinary skill in the art to select the desired amount of gamma prime phase from the range of Chang because Chang teaches the same utility throughout the disclosed range.

With respect to the heat treatment time in claim 7, Chang does not specify heat-treating for a time of 0.25-2 hours. However, Chang teaches (page 7 lines 45-55) heat-treating for a time to essentially completely dissolve the gamma prime precipitate. Since treatment time is a recognized result-effective variable as taught by Chang, it would have been obvious to one of ordinary skill in the art to select the desired treatment time in order to essentially completely dissolve the gamma prime precipitate as a routine optimization as taught by Chang.

With respect to the recitation "for reducing stress" in claim 7, the Examiner asserts that the method would inherently reduce stress because Chang teaches all the steps of the claimed method.

Regarding claim 8, Chang teaches (Examples 2-4) cooling at 1500 degrees F per minute (i.e. quenching) followed by subsolvus precipitation heat treatment.

Regarding claims 9-11, Chang teaches (Examples 5-7) super-solvus heat-treating the superalloy article to a of 27 degrees F above the gamma solvus temperature.

Regarding claims 12-13, Chang teaches (page 7 lines 45-55) super-solvus heat-treating the superalloy article to a temperature above the solvus temperature, which overlaps with the claimed ranges of about 5 and about 15 degrees F above the solvus temperature, which is prima facie evidence of obviousness. See MPEP 2144.05 I. It would have been obvious to one of ordinary skill in the art to select the desire heat treatment temperature from the range disclosed by Chang because Chang teaches the same utility throughout the disclosed range.

Regarding claim 18, Chang does not specify heat treating for a time of 1-2 hours. However, Chang teaches (page 7 lines 45-55) heat-treating for a time to essentially completely dissolve the gamma prime precipitate. Since treatment time is a recognized result-effective variable as taught by Chang, it would have been obvious to one of ordinary skill in the art to select the desired treatment time in order to essentially completely dissolve the gamma prime precipitate as a routine optimization as taught by Chang.

Regarding claim 19, Chang does not specify heat treating for a time of about 1 hour. However, Chang teaches (page 7 lines 45-55) heat-treating for a time to essentially completely dissolve the gamma prime precipitate. Since treatment time is a recognized result-effective variable as taught by Chang, it would have been obvious to one of ordinary skill in the art to select the desired treatment time in order to essentially

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completely dissolve the gamma prime precipitate as a routine optimization as taught by Chang.

Claims 3 and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang as applied to claims 1 and 7 above, and further in view of Johnson et al. (United States Statutory Invention Registration No. H647).

Regarding claims 3, Chang do not specify using Rene-88DT to form the nickel-based superalloy articles. However, Johnson teaches (col. 1 lines 40-48) that Rene-88DT is a fatigue and/or burst resistant nickel-based superalloy article. It would have been obvious to one of ordinary skill in the art to modify the method of Chang by using Rene-88DT as the nickel-based superalloy article because Rene-88DT is fatigue and/or burst resistant as taught by Johnson.

Regarding claims 14-16, see the rejection of claim 3 above. Furthermore, Chang and Johnson do not specify that the heat treatment temperature would be 2065 or 2070 degrees F. However, Chang teaches (page 7 lines 45-55) super-solvus heat-treating the superalloy article to a temperature above the solvus temperature, which would include the claimed ranges of about 2065 and about 2070 degrees F above the solvus temperature, which is prima facie evidence of obviousness. See MPEP 2144.05 I. It would have been obvious to one of ordinary skill in the art to select the desire heat treatment temperature from the range disclosed by Chang because Chang teaches the same utility throughout the disclosed range.

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Claims 4 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang as applied to claims 1 and 7 above, and further in view of Mourer et al. (EP 1,201,777).

Regarding claims 4 and 17, Chang teaches (abstract) that the method improves fatigue crack resistance but do not specify applying the method to a high pressure turbine disk. However, Mourer teaches a high pressure turbine disk formed of a nickel-based superalloy composition. It would have been obvious to one of ordinary skill in the art to combine the methods of Chang and Mourer in order to improve the fatigue crack resistance of the high pressure turbine disk of Mourer as taught by Chang.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael P. Alexander whose telephone number is 571-272-8558. The examiner can normally be reached on M-F 8:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V. King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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